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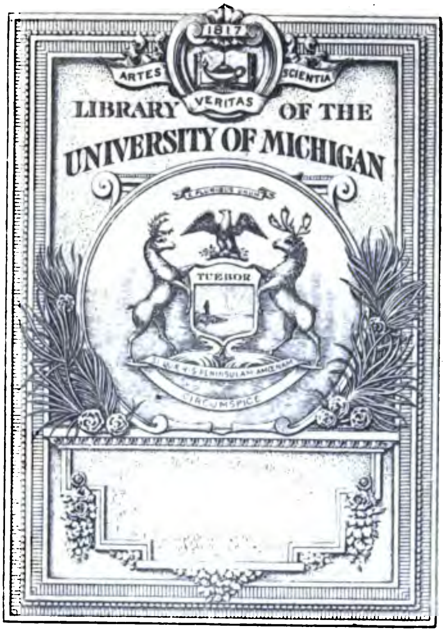

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Field Artillery Training

ENLISTED

ARMY WAR COLLEGE
AUGUST, 1917

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WAR DEPARTMENT,
WASHINGTON, *August 27, 1917.*

The following pamphlet on Artillery Training, Enlisted, is published for the information and guidance of all concerned.

[353.548, A. G. O.]

BY ORDER OF THE SECRETARY OF WAR:

H. L. SCOTT,
Major General, Chief of Staff.

OFFICIAL:
H. P. McCAIN,
The Adjutant General.

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FIELD ARTILLERY TRAINING, ENLISTED.

Responsibility for the training of the troops committed to their charge rests on all commanders. Subject to the principles laid down in the various training manuals, regulations, and this general program, commanders are at liberty to employ such methods as appear best calculated to attain the desired end.

Superior commanders, while holding their subordinates responsible for the training of their units, will never forego their function of guidance and control and will exercise a general and continuous supervision over their work. In carrying out this duty they should not curb the initiative of their subordinates nor interfere unnecessarily so long as the training is conducted on sound lines.

Without trained cadres of officers and men to carry on the instruction, the presence of all battery officers with their batteries is essential for the proper instruction of their men, especially during the period of preliminary instruction, and officers should not be taken from the batteries to perform staff or other duties for which staff officers are provided.

The captain must supervise the instruction of the sections of his battery, advise the lieutenants, and make corrections whenever necessary to produce results.

Training must include both moral and physical instruction. The development of a soldierly spirit is required to help the soldier bear fatigue, privation, and danger cheerfully; to imbue him with a sense of honor; to give him confidence in his superiors and comrades; to increase his powers of initiative, of self-confidence, and of self-restraint; to train him to obey orders or to act suitably in their absence; to impress upon him that so long as he is physically capable of fighting, surrender to the enemy is a disgraceful act; and finally to produce such a state of discipline that each individual will perform his duty coolly and correctly in the stress of battle.

As soon as a man enters the service every endeavor should be made to foster in him a soldierly spirit. Officers and noncommissioned officers must remember that it is chiefly by their example that the development of a soldierly spirit will be achieved.

Field Artillery, newly organized, will be composed of men having little or no military training, and officers with some military training, but for the greater part with little or no experience as officers.

It is essential that some scheme of instruction be announced which, with the modifications made necessary by climate and season, will produce troops uniformly and thoroughly trained along the same lines.

The varying conditions as to equipment and matériel forbid the enunciation of a rigid, detailed program even if such a plan was considered wise. A system is sought which will harmonize the instruction of all the Field Artillery without robbing commanding officers of initiative or relieving them of any of their responsibility for the fitness of their commands.

Time being limited, concentration on the duties demanded of the Field Artillery in the present trench warfare is imperative.

A general program of instruction, based on a minimum of 40 actual drill hours per week, is attached hereto and marked "Appendix A." Based upon this program all commanders and instructors must prepare schedules covering the work allotted to them. The performance of all training by schedule is essential.

CONCENTRATED TRAINING—16 WEEKS.

The 16 weeks which it is considered may be devoted to concentrated training before required for service abroad will be divided into two general periods as follows:

(*a*) The first or fundamental period will last about four weeks and will cover instruction to be given to all Field Artillery soldiers.

(*b*) The second period will be devoted to specialized instruction for the individual and all higher units.

FIRST PERIOD.

It is not sufficiently realized to what an extent the success of a soldier's training depends upon the use of his first days in the military life. His mind from a military standpoint is open for fresh impressions; his moral courage, esprit, and patriotism can be easily aroused and stimulated; he is unconsciously weighing the service, and much of his later value rests with his first instructors.

The objects of drill are to teach discipline, to acquire military knowledge and proficiency.

Discipline is founded on cheerful obedience, mutual confidence, loyalty, patriotism, and esprit de corps.

The necessity for the insistence upon small points of discipline must be emphasized. Officers should everywhere and at all times present a model in appearance and military deportment for the men. This is as much the duty of the senior military commander as of the junior subaltern; salutes accorded juniors as well as seniors should be punctiliously observed and strictly conform to regulations. The details of dress, hair cutting, cleanliness of body and clothing, shaving, correct wearing of equipment, etc., should never be neglected.

Officers must possess an interest in the men of their organization and be quick to observe mental and physical depression. The sympathetic adaptation of instruction in individual cases where men are "blue" or down in spirit will have great influence on the general morale. A man out of spirit tends to depress the enthusiasm of others and should be given a change of duty and kept busy at something which will hold his interest. Due to the home life and family ties of our drafted forces, this condition will arise frequently, and commanding officers must be prepared to meet the situation. To excuse the man from duty will only give him idle time in which to brood and is the worst procedure, but, as it is the easiest way, officers must guard against this mistake.

Men are taught in three ways:

By verbal explanations.—This should be used with caution, as many points never reach the mind of the hearer, and those which do may be soon confused or forgotten.

By demonstration.—This creates an impression which is probably clear for the moment and lasts for a time.

By requiring performance of the action taught.—This method is the only one to use where practicable; most men retain knowledge of and can do again that which they have already done.

The subjects taught during the first period of about four weeks are such as will apply to every Field Artillery soldier. No soldier, whatever his position, should be without certain fundamental training. It is better to assume in this regard that each man is a recruit until he can demonstrate the contrary, as many men of some slight military experience soon fall behind when not given the regular instruction.

Based upon a time allotment of 16 weeks, no battery organization should be attempted at first. Arrange all men in four or five sections, assigning to sections in proportion some men of previous military training and men who seem to stand out above the others. These sections should be uniform in size and not too large. They should be permanent for the first period, the men of a section drilling, bunking, and messing together and having noncommissioned officers and acting noncommissioned officers assigned as permanent section leaders.

A lieutenant should be permanently assigned in charge of one branch of instruction and be given as permanent assistants certain selected men whose individuality or previous military experience mark them as probable noncommissioned officers. The training of these assistants is the duty of the instructor, but when competent as assistants they are temporarily detached one at a time and sent to learn under other instructors.

The organization commander supervises and is responsible for all instruction. He will attend to all details pertaining to general administration and schedules, and will relieve the instructors assigned to particular branches of all worry and detail not an essential part of that particular instruction. It will be his duty to prepare weekly schedules showing the hours of attendance of all sections and for all instruction. A sample of such a schedule arranged for five sections and an actual drill time of seven and one-half hours daily is appended, marked "Appendix B." It assumes an officer or qualified noncommissioned officer available as instructor in each of the five divisions. The sections attending the first hours should alternate by weeks in the instruction attended. This weekly time schedule is based on a general schedule for the first period which must be prepared by organization commanders under the supervision of battalion and regimental commanders. This schedule must allot instruction periods for each subject to be covered in the period. Sample schedule attached, marked "Appendix C."

Lecture subjects are selected and assigned to officers who will thoroughly prepare themselves upon the subject or subjects assigned. Rather than have an officer lecture upon a subject unprepared, the instruction should be omitted. Inclement weather is generally utilized for lectures, but when necessary they are introduced into the schedule.

The following subjects should be included in the first period.

Artillery.—Daily for the entire period. Weekly programs of instruction are arranged by the officer in charge of artillery instruction and are submitted to battery (and battalion) commanders for approval. The different artillery instructors in the organizations of the regiment should be assembled and lectured upon the particular subject "Preparation of schedules" by the most competent artillery advisor available, and thereafter should frequently confer with this officer and with one another. Drill and Service Regulations for Field Artillery, handbooks of the Ordnance Department, and Artillery Notes issued by the War Department and School of Fire for Field Artillery should be in the possession of all instructors and thoroughly mastered by them. They will prepare and issue, in whatever way may be practicable, list of nomenclature, rules for care of matériel, diagrams of positions, and such other memoranda as will aid the instruction. Instruction in the detailed service of the piece must be thorough and is always more or less monotonous. This may be relieved somewhat by keeping records and stimulating competition. The schedule will be arranged to include the care of all matériel. Sample of schedule attached, marked "Appendix D."

Mounted.—Daily for the entire period. Weekly programs of instruction by the officer in charge as for Artillery. Instructors are lectured in same manner. The programs of instruction should include the morning police of stables (by the section attending during the first hour). Grooming is a part of the schedule, and horses are either assigned for the purpose or the men groom those they use. Instructor should study carefully the Field Service Regulations for Field Artillery and service manuals on the care of animals, shoeing, etc. The following points covered in the Regulations must be applied from the first: Riding instruction should begin at the walk on gentle horses and over varied ground, either with or without saddles; unbroken, nervous, or vicious horses should be assigned to picked men for gentling; men having a natural timidity about horses should be given only the quiet animals. The fitting and care of harness, saddles, and bridles should be a matter of schedule. As men become accustomed to riding, the quiet horses should be trained to draft; the men of the most aptitude should then begin training the remaining horses.

Dismounted instruction.—Daily for the entire period. Weekly programs of instruction by the officer in charge as for Artillery. Dismounted instruction is of importance for Field Artillery and is a valuable aid in teaching discipline, soldierly bearing, and alertness. It is combined throughout the period with instruction in calisthenics, guard duty, etc. (See remarks on Appendix A.) Recruits should always be marched to and from drills by squads and at attention.

Calisthenics.—Daily for the entire period, with dismounted instruction.

Purely as a setting-up exercise, it is best to adopt a few simple exercises which will become known to the soldiers. Swinging exercises which affect a large part of the body are preferable, particularly to supple men more or less muscle bound. The instructors should regularly execute the exercises with the squad. An object is the development of an athletic spirit in the soldier, and to this end running, jumping, and games of different kinds are recommended. Boxing is useful in developing a fighting spirit, if required of all men, whether skilled or not.

Guard duty.—Beginning with first week and continued until qualified. The performance of guard duty should interfere as little as practicable with concentrated instruction. Extracts from Manual of Interior Guard Duty and Camp Guard Regulations should be prominently posted where easily accessible to all soldiers. Where printing facilities are available, a copy of these extracts should be issued to each man.

Hygiene.—Beginning with first week and continued until instructed. Personal hygiene is taught by schedule, practically, and by lectures, and is observed and regulated at all times. Hygiene and sanitation applicable to camps, marches, billets, bivouac, etc., are taught by lectures and, where possible, by practice. The instructors in this subject should be lectured by competent and practical medical officers. After once outlining the principle of hygiene as a matter of schedule, it is afterwards fixed as a habit by observation and inspection. A practical talk by one of the officers on venereal diseases should supplement lectures given by medical officers.

Individual cooking.—First period by schedule. To include building of fires. Instruction in the actual methods of cooking can best be had in battery kitchen under direction of mess sergeant or cook. Practical individual cooking will be a part of camping, etc., in second period.

Salutes, courtesies, customs of the service, rules of war, rights of prisoners of war, parole, articles of war particularly affecting the individual soldier.—Included in the schedule as a part of the first period of instruction. By lectures and practically for such as admit of practical application. It is important to make soldiers realize what information is of value to the enemy and the methods generally pursued by the enemy in obtaining this information from prisoners.

Use of gas masks.—By schedule for first period. Theoretical and practical by a medical officer or other qualified instructor. Sufficient masks for one battery will probably be issued to each regiment. Instruction periods for batteries will be designated by regimental commanders. Manual on gases which prescribe requirements for qualification in use of masks will be issued by Medical Department.

Pistol.—(*a*) Manual, nomenclature, care of. To begin with issue of pistols until qualified.

(*b*) Use of. To begin as soon as sufficient pistols are available. Men to be qualified in pointing and aiming, triangles, slow fire at short ranges, quick fire at short ranges. Advance will be made only when qualified in preceding exercise. The object desired is to train all men to deliver a quick fire and at short distance to be able to hit a figure.

NOTE.—Practice rods for use with miniature targets will assist in this instruction. Where not available, a long lead pencil with eraser may be of some assistance.

Individual records.—By schedule first week of first period. Age, nationality, languages spoken, education, occupation in detail. From this investigation the following lists should be made:

(*a*) Probable candidates for commissions (to be observed and sent to special school for officers).

(*b*) Probable noncommissioned officers.

(*c*) Men for special details.

(*d*) Men well below the normal whose military value will be limited.

Measurement for clothing.—By schedule first week of first period. Depending upon clothing available for issue this should be followed by clothing issues, instruction in methods of wearing, etc.

Blanket rolls, surplus kit, field kit, slicker roll, other equipment.—Preparation, contents, methods of carrying. Inspection for barracks and field. Instruction by schedule during first period. Thereafter observed and details insisted upon. Diagrams and lists should be prepared and freely exposed where they may be readily consulted.

Shelter tents.—Instruction in pitching during first period. By schedule as a part of dismounted drill. Arrangement of shelter tent camp of a battery for various differing conditions should be outlined.

First aid.—Practical by schedule during first period. Drills must be short and for small number of men at a time. Instructors should prepare schedule after consultation with and training by medical officers. All lectures should, if practicable, be given by competent medical officers. The protection against tetanus, gangrene, and gas must be especially covered. Vermin and trench diseases of all kinds must be made known to all soldiers. Adopt the principle of informing the soldier fully concerning the conditions prevailing where he may serve.

Signaling.—Beginning in first period. An opportunity should be given for all men to learn, but thorough instruction will be limited to about 25 per cent of the battery. During first period given general instruction which will enable all men to learn the prescribed codes. Have signal cards posted where they may be readily consulted. The special instruction of some men may be undertaken at once.

Simple cordage.—To include only simple hitches, clove hitch, bowline, square knot, and some idea of the use of blocks and tackles. To be of practical value in tying animals, fastening ropes in assisting difficult draft, and in care and assembling of matériel.

NOTE.—Particular attention must be given to developing in Field Artillery an enthusiasm for the Infantry with whom they fight. As the Infantry training progresses, the Field Artillery should be taken to witness the drill of well-qualified units, particularly in such matters as bayonet fighting, bombing, etc. This drill should be made real and alive by informal talks in which are included reports or remarks on actual happening, both our own and the enemy. This lecture should include data on bombs, grenades, etc., with relative effects of each.

SECOND PERIOD.

Men are rearranged into general classes of drivers, cannoneers, and men training for special details and duties. The men qualified in special duties should be double the number necessary in the normal battery organization.

Make a general division of the battery in three sections.

First section will comprise all special details as follows:

- Signal.
- Telephone.
- Noncommissioned officers not required as instructors.
- Mechanics, horseshoers, saddlers, farriers, carpenters, etc.
- Cooks and candidates, buglers.
- Other men not assigned.

Second section will comprise men assigned duty in connection with the service of the gun, cannoneers.

Third section will comprise drivers.

SUGGESTED GENERAL SCHEDULE, FIFTH TO SIXTEENTH WEEK (INCLUSIVE).

Fifth to seventh week, individual instruction:

	A. M.	P. M.
Driver	Mounted	Dismounted, pistol and artillery.
Cannoneers	Artillery	Mounted, dismounted and pistol.
Special details	Special	Special, pistol (dismounted at least once a week).

NOTE.—Drivers should have artillery instruction about three times per week in p. m.; cannoneers, mounted instruction. Dismounted instruction (which will cover all instructions except mounted and artillery) will be daily in p. m. for drivers and cannoneers and occasionally for special details. Pistol for all men until sufficiently instructed. Instructors in artillery and mounted will coordinate schedules and training.

Eighth to twelfth week, battery instruction:

A. m. Drivers, cannoneers, and special details will be given maximum time on their special work. Battery commander arranges the work of the different details into a battery organization.

P. m. Same as for fifth to seventh week.

Thirteenth week:

Battery work. Occupation of positions, day and night. Laying out of gun positions and emplacements. Practice of leaving camp, entraining, marching, etc.

P. m. Work on special instruction.

Fourteenth week:

Battalion and battery work. To include selection and occupation of position, construction of complete emplacement, simple firing problem.

Fifteenth and sixteenth week:

Firing instruction and practice from selected position, firing from emplacement, relieving artillery in emplacement firing problems with aerial observation, service practice wearing gas masks, barrage practice.

Drivers.—Instruction of drivers includes:

1. Training of new animals for draft.
2. Training of the animals assigned for draft.
3. Draft over terrain of all kinds. It is important that drivers should know the powers and limitations of the team unaided and the best method of negotiating difficult obstacles; the powers and limitations of the team when aided by cannoneers.
4. Movements on the battle field, concealment, location of limbers, teams, etc.
5. Care of animals in field, forage, feeding, watering, picket lines, care of feet under bad conditions, care of harness. Particular care to be given to the shoulder, neck, and back of horses.

Draft to include night occupation of positions and marches.

Special instruction.—Instructors must be specially qualified. Instruction should conform to Drill Regulations and be adapted to needs of the present war.

Communication.—Wireless, wire, ground, flag, pigeon, special with aeroplane, rockets, etc.

Construction and occupation of observing stations:

(*a*) Near battery or regiment.

(*b*) In trenches.

Use of maps, map reading, orientation, construction, field sketches, panoramic sketches, trench maps.

Simulated field service using gas masks.

Instruments, field glasses, special instruments, angle measurement with and without instruments. Changes in data from day to day, due to weather conditions.

Cover and camouflage.

Movements at night:

Mechanics, cooks, etc. Practical instruction for position sought.

Artillery.—To begin in fifth week with a complete review of first four weeks' instruction and to be continued by a progressive program which will accomplish (*a*) thorough training of individuals as cannoneers; (*b*) thorough training of the squads of cannoneers as a battery.

Pistol, as in first period, to include practical handling of arm and qualified when able to fire quickly and accurately on figure targets.

Castrametation. To include location of camps, sanitation, drainage, etc., pitching tents authorized. Messing in camp, bivouac, billet.

Gas masks. To complete qualification.

Officers.—The instruction of officers of newly organized regiments, or of newly appointed officers, is a function of battalion and higher commanders.

In addition to training of the enlisted personnel, officers must, by a proper course of reading and study and practical exercises, prepare themselves for all duties required of them as officers.

Regimental and battalion commanders should outline and require of all officers a proper course of reading, study, and practical exercises, to the end that they will at the proper time be able to perform any duty which properly pertains to their position. This will require a great deal of study and work in addition to the time which they must devote each day to the instruction of enlisted men.

Some of this work may be outlined as follows:

1. Study and recitation in: Drill Regulations, Field Service Regulations, Manual of Courts-Martial.
2. Army Regulations, customs and courtesies of the service. (Lecture.)
3. Rules of land warfare, with particular attention to present war, prisoners of war, paroles, etc.
4. Sketching, maps, map reading, construction and use of scales, use of French maps, etc.
5. Use of range-finding, fire-control, and signal equipment, including tests of buzzer and telephones.
6. Observation of fire and the correction of errors.
7. Smoke bombs, terrain board, blackboard, and simulated fire. (See Appendix "E.")
8. Reconnaissance, selection, and occupation of positions.
9. Firing by map, use of compass in obtaining deflections.
10. Computation of fire data.
11. Close shooting as required in trench warfare.

An extract of a report hereto attached, marked "Appendix X," is based upon British training in their cadet schools and should be consulted by regimental commanders in the preparation of schedules for officers' training.

APPENDIX A.

ALL MEN.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Physical drill.	Salutes and courtesies.	Organization, clothing and equipment.	Dismounted instruction.	The pistol, or rifle.	Guard duty.	Nomenclature care of matériel and projectiles.	Simple cordage.	Constructing emplacements and concealment.	Preliminary exercises of the gun squad.	The cannoneer.	The firing battery.	Individual equipment, rolls and kits, shelter tents.	Castrametation.	Anti-gas drill.	The battery mounted, route marches and occupation of positions.	Nomenclature and care of, horse equipment.	Stables and grooming, care of animals and stables.	The soldier mounted.	The driver.	Subcaliber practice.	Service practice.	Visual signaling.	The service buzzer.	Instruments, range finding and fire-control.	Entraining, loading and unloading animals and equipment.	Field artillery information service.[1]	Hygiene, personal, barrack and camp.	First-aid.	Lectures.
First week	3	2	1	8	1	3	2½	..	....	5	1½	....	....	..	..	......	....	6	3	...	..	...	...	...	....	......	....	1	..	..
Second week	3	..	....	6	4	1½	1½	..	....	1½	6	....	1½	..	1½	......	....	9		...	..	...	2	...	....	......	....	....	1	1½
Third week	3	..	....	5½	3	1	1½	½	3	....	7	....	½	..	1½	......	....	9		...	..	...	[3]2		....	......	....	....	1	[2]1½
Fourth week[3]	3	..	....	4½	5	..	1½	½	....	....	3	3	....	1½	..	......	....	9		...	..	...	2½		....	......	....	1½	..	1

CANNONEERS.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Fifth week	3	..	....	[4]3½	..	..	4	..	....	....	5	15	....	..	1	......	....	....	7½		..	...	...	...	....	......	....	....	..	1
Sixth week	3	..	....	[4]3½	..	..	4	..	....	....	5	15	....	..	1	......	....	....	7½		..	...	...	...	....	......	....	....	..	1
Seventh week	3	..	....	[4]3½	..	..	4	..	....	....	5	15	....	..	1	......	....	....	7½		..	...	...	...	....	......	....	....	..	1
Eighth week	[5]3	..	....	[5]1½	(6)	..	4	½	4	....	4	13	....	..	1	[7]3	....	....	5		..	...	...	...	....	......	....	....	..	1
Ninth week	3	..	....	1½	..	..	3	..	....	....	3½	16	....	..	1	6	....	....	5		..	...	...	...	....	......	....	....	..	1
Tenth week	3	..	....	1½	..	..	3	..	....	....	3½	13	....	..	1	9	....	....	5		..	...	...	...	....	......	....	....	..	1
Eleventh week	3	..	....	1½	..	..	3	..	....	....	1½	10	....	..	1	[8]14	....	....	..	5	..	...	...	...	....	......	....	....	..	1
Twelfth week	3	..	....	1½	..	..	3	..	7	....	...	4	....	..	1	[9]18	....	....	..	1½	..	...	...	...	....	......	....	....	..	1
Thirteenth week	3	..	....	1½	..	..	3	½	....	....	...	10	....	..	1	5	....	....	..	3	6	..	...	...	....	6	....	....	..	1
Fourteenth week	3	..	....	1½	..	..	3	..	....	....	...	12½	....	..	1	5	....	....	..	3	8	2	...	...	....	......	....	....	..	1
Fifteenth week	3	..	....	1½	..	..	4	..	....	....	...	5½	....	..	1	......	....	....	..	...	..	24	...	...	....	......	....	....	..	1
Sixteenth week	3	..	....	1½	..	..	4	..	....	....	...	5½	....	..	1	......	....	....	..	...	..	24	...	...	....	......	....	....	..	1

DRIVERS.

Fifth week	3			[4]3½							1½	3			1		2½	7½	12	5										1
Sixth week	3			[4]3½							1½	3			1		2½	7½	10	7										1
Seventh week	3			[4]3½							1½	3			1		2½	7½	7	10										1
Eighth week	3			1½				½	4			2			1	3	2½	7½	4	10										1
Ninth week	3			1½							2½	4			1	6	2½	7½	3	8										1
Tenth week	3			1½							1½	5			1	9	2½	7½		8										1
Eleventh week	3			1½							1½	5			1	[8]14	2	6		5										1
Twelfth week	3			1½					7			1½			1	[9]18	2	3												1
Thirteenth week	3			1½											1	5	2½	7½		6½	6					6				1
Fourteenth week	3			1½								2½			1	5	2½	7½		6	8	2			*					1
Fifteenth week	3			1½								½					2½	7½				24								1
Sixteenth week	3			1½								½					2½	7½				24								1

SPECIAL DETAILS.

Fifth week	3			[4]3½											1		2½	4	12				2	5	6					1
Sixth week	3			[4]3½											1		2½	4	10				2	5	5		3			1
Seventh week	3			[4]3½											1		2½	4	7				1½	4½	6		6			1
Eighth week	3			1½					4						1	3	2½	4	4				1½	4½	4		6			1
Ninth week	3			1½											1	2	2½	4	3				1	4	5		12			1
Tenth week	3														1	3	2½	4	1½				1	4	4		15			1
Eleventh week	3			1½											1	[8]10	2	3	1½					2	3		12			1
Twelfth week	3								7						1	[9]18	2	2½						1	1½		3			1
Thirteenth week	3														1		2½	4	1½		6		1	2	3	6	9			1
Fourteenth week	3			1½											1		2½	4			8	2	1	1	3		12			1
Fifteenth week	3														1		2½	4				24		1	½		3			1
Sixteenth week	3														1		2½	4				24		1	½		3			1

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[1] Includes all duties of specialists not otherwise provided for.

[2] Lecture on visual signalling and service buzzer.

[3] Four hours inspection in Fourth week for purpose of classification of men.

[4] Includes subjects 2, 5, and 6.

[5] Eighth to sixteenth weeks, inclusive, subject 1 should be given in connection with 4.

[6] Subject 5 should be included with instruction under 1 and 4 until proficient.

[7] Should include firing a few service rounds, if practicable, for instruction of cannoneers only.

[8] Includes a one day's march with instructions in subjects 13, 14, and 28, and for drivers and special details subject 18.

[9] Includes a two days' march with instructions in subjects 13, 14, and 28, and for drivers and special details subjects 18.

NOTE.—This program shows the relative value attached to the various subjects.

APPENDIX B.

	7 to 8.30.	8.45 to 10.15.	10.30 to 12.	1.30 to 3.	3.15 to 4.45.
MONDAY.					
First section	Artillery	Mounted	Dismounted and calisthenics.	Arrangement of bunks.	Salutes, etc.
Second section	Mounted	Dismounted and calisthenics.	Arrangement of bunks.	Salutes, etc.	Artillery.
Third section	Dismounted and calisthenics.	Arrangement of bunks.	Salutes and courtesies.	Artillery	Mounted.
Fourth section	Arrangement of bunks	Salutes and courtesies.	Artillery	Mounted	Dismounted and calisthenics.
Fifth section	Salutes, courtesies, etc	Artillery	Mounted	Dismounted and calisthenics.	Arrangement of bunks.
TUESDAY.					
First section	Artillery	Mounted	Dismounted and calisthenics.	Records for soldiers	Measurements for clothing.
Second section	Mounted	Dismounted and calisthenics.	Records of soldiers	Measurements for clothing.	Artillery.
Third section	Dismounted and calisthenics.	Records of soldiers	Measurements for clothing.	Artillery	Mounted.
Fourth section	Records of soldiers	Measurements for clothing.	Artillery	Mounted	Dismounted and calisthenics.
Fifth section	Measurements for clothing.	Artillery	Mounted	Dismounted and calisthenics.	Records of soldiers.
WEDNESDAY.					
First section	Artillery	Mounted	Dismounted, etc	Barracks sanitation.	Salutes, records, measures.
Second section	Mounted	Dismounted, etc	Barracks sanitation.	Salutes, records, measures.	Artillery.
Third section	Dismounted and calisthenics.	Barracks sanitation	Salutes, records, measures.	Artillery	Mounted.
Fourth section	Barracks sanitation	Salutes, records, measures.	Artillery	Mounted	Dismounted, etc.
Fifth section	Review, salutes, etc., complete records, etc.	Artillery	Mounted	Dismounted, etc	Barracks sanitation.

THURSDAY.					
First section	Artillery	Mounted	Dismounted, etc	Draw clothing	Guard instruction.
Second section	Mounted	Dismounted, etc	Draw clothing	Guard instruction	Artillery.
Third section	Dismounted and calisthenics.	Draw clothing	Guard instruction	Artillery	Mounted.
Fourth section	Draw clothing	Guard instruction	Artillery	Mounted	Dismounted, etc.
Fifth section	Instruction for guard duty.	Artillery	Mounted	Dismounted, etc	Draw clothing.
FRIDAY.					
First section	Artillery	Mounted	Dismounted, etc	Clothing, etc	Guard duty.
Second section	Mounted	Dismounted, etc	Clothing, etc	Guard duty	Artillery.
Third section	Dismounted and calisthenics.	Clothing, etc	Guard duty	Artillery	Mounted.
Fourth section	Arrangement, marking, inspection as to fit of clothing.	Instruction for guard duty.	Artillery	Mounted	Dismounted, etc.
Fifth section	Instruction for guard duty.	Artillery	Mounted	Dismounted, etc	Clothing, etc.
SATURDAY.					
First section	Artillery	Mounted	Dismounted, etc., miscellaneous.		
Second section	Mounted	Dismounted and calisthenics.	(1)		
Third section	Dismounted and calisthenics, miscellaneous.	(1)	(1)		Lead in and water.
Fourth section	Police of barracks and grounds.	Dismounted and calisthenics, miscellaneous.	Artillery		
Fifth section	Dismounted and calisthenics, miscellaneous.	Artillery	Mounted		

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(1) Complete records, clothing, etc.

APPENDIX C.

FIRST WEEK.

	7 to 8.30.	8.45 to 10.15.	10.30 to 12.	1.30 to 3.	3.15 to 4.45.
Monday	Artillery	Mounted	Dismounted and calesthenics.	Arrangement of bunks and squad rooms.	Salutes and courtesies.
Tuesday	do	do	do	Records of soldiers	Measurement for clothing.
Wednesday	do	do	do	Personal hygiene around barracks.	Review, salutes, etc.; complete records.
Thursday	do	do	do	Draw clothing	Guard instruction.
Friday	do	do	do	Arrangement of clothing; fit and method of wearing.	Do.
Saturday	do	do	do	Police of barracks and grounds.	Nomenclature of pistol; semaphore.
Sunday (a.m.)[1]					

SECOND WEEK.

	7 to 8.30.	8.45 to 10.15.	10.30 to 12.	1.30 to 3.	3.15 to 4.45.
Monday	Artillery	Mounted	Dismounted and calesthenics.	Blanket rolls, slickers, etc	Guard instruction.
Tuesday	do	do	do	Nomenclature of pistol; care of, cleaning, aiming.	Gas masks, how to adjust; short talk about gas.
Wednesday	do	do	Dismounted and pitching shelter tents and calesthenics.	Aiming pistols, snapping, triangles.	Talk on war conditions; prisoners of war; rights of prisoners.
Thursday	do	do	Dismounted and qualifying certain men for guard and calesthenics.	Continue pistol	Signaling semaphore.
Friday	do	do	do	do	First aid.
Saturday	do	do	do	Pistol-police, barracks and grounds, and semaphore signaling.	Personal hygiene: venereal diseases. All men last a. m. period.
Sunday (a.m.)[2]					

THIRD WEEK.

Monday	Artillery	Mounted	Dismounted and calesthenics.	Pistol	Tent pitching and guard to qualify.
Tuesday	do	do	Dismounted and calesthenics; to include observation of Infantry in bayonet examination.	Pistol and semaphore	Gas masks; practical and questions.
Wednesday	do	do	Dismounted and calesthenics; guard formation.	Pistol and first aid	Gun emplacements and trench lines.
Thursday	do	do	Dismounted and calesthenics: marched to observe Infantry in foot drill.	Pistol	Laying out gun emplacements.
Friday	do	do	Dismounted and calesthenics; guard for backward men.	Signaling, methods, necessity; different codes.	First aid.
Saturday	do	do	Dismounted and calesthenics.	Police of barracks and grounds.	Entire battery, last period a. m.; talk on cover and camouflage.
Sunday(a. m.)[2]					

FOURTH WEEK.

Monday	Artillery	Mounted	Dismounted and calesthenics.	Pistol and signaling	Building fires for individual cooking.
Tuesday	do	do	do	do	Trenches for urinals, etc., and kitchen refuse.
Wednesday	do	do	do	do	Clean up.
Thursday	do	do	do	do	On instruction laid down and not completed.
Friday	do	do	do	do	Do.
Saturday	do	do	do	Last hour, lecture on maps	
Sunday(a. m.)[2]					

[1] Inspection of barracks.

[2] Inspection of barracks (during first period only).

NOTE.—Lectures are of two kinds, (a) those given by instructor to each section separately as a part of his instruction; (b) those given the battery as a whole by the captain or other officer.

APPENDIX D.

FIRST WEEK.

Monday:
  ½ hour—
    General nomenclature, purpose and operation of piece and caisson.
  1 hour—
    To form gun squad.
    To tell off gun squad.
    Posts of gun squad, carriages limbered. To post the gun squad.
    Posts of the cannoneers, limbered. To post cannoneers, limbered.
Tuesday:
  1 hour—
    Review general nomenclature.
    To mount cannoneers.
    To dismount cannoneers.
    Posts of cannoneers unlimbered but not prepared for action.
    To change posts.
  ½ hour—
    General description and operation of sights, quadrant, and fuse setter.
Wednesday:
  1 hour—
    Movements by hand, limbered.
    Duties in unlimbering—
      Action front.
      Action rear.
    Limbering—Front and rear.
  ½ hour—
    Tools and accessories.
    Kinds and use of projectiles.
Thursday:
  1 hour—
    Duties in unlimbering, action right and left.
    Limbering rear.
  ½ hour—
    Operation of sights, quadrant, and fuze setter.
Friday:
  1 hour—
    General review.
    Movements by hand, unlimbered.
  ½ hour—
    General duties of gunner, 1, 2, 3, 4, 5.
Saturday:
  1½ hours—
    Nomenclature and care of matériel (practical cleaning, oiling, disassembling, and assembling).

SECOND WEEK.

Monday: The range scale and the panoramic sight; duties of gunner.
Tuesday: The range quadrant—To open and close breach.
  Duties of—
    No. 1; review.
    No. 2.

Wednesday: The fuze setter—Duties of 3, 4, 5.
Thursday: The deflection; the site.
Measure deflection and site.
Friday: Review of Monday, Tuesday, Wednesday, and Thursday.
Saturday: Practical nomenclature; cleaning, etc.

THIRD WEEK.

Monday: Exercises in duties of gunner 1; 2.
Exercises in duties of gunner 3; 4; 5.
Tuesday: Same as Monday.
Explanation of action of projectiles.
Wednesday: Explanation of making changes in setting at commands.
Thursday: Same as Wednesday and Monday.
Friday: Movements of carriages; unlimbered to prepare for action.
Saturday: Use of oils; tools; method of carrying; care; cleaning; nomenclature.

FOURTH WEEK.

Monday: Review of first week; drill of gun squad.
To prepare for action and march order.
Tuesday: To prepare for action; exercise in duties of cannoneers; methods and kinds of fire; march order.
Wednesday: Same as Tuesday.
Thursday: Gun squads working as firing battery; preparation for action; service of piece.
Friday: Lecture on fire.
To give general idea of the trajectory; burst of projectiles; powers and limits of projectiles; information about fire used abroad; names of particular kinds of fire; necessity for accuracy as support or protection to our infantry.
Saturday: Cleaning; questions on use of oils, tools, cleaning, repairs, nomenclature.

APPENDIX E.

NOTES ON SMOKE-BOMB PRACTICE.

Smoke-bomb practice is a valuable means of training officers in conduct of fire and the handling of fire data and should be freely employed in their instruction previous to service practice.

In order to be of the greatest value, every effort must be made to have the system operated as efficiently as possible. Long delays and mistakes on the part of the operators detract seriously from the effect. It is therefore necessary to place an officer in charge of the operation who is thoroughly familiar with fire data, to give him the best available enlisted assistants, and to train the details thoroughly in this work. After the men are trained, they can be relieved, one or two at a time, in order to equalize the work. Other officers can also be placed in charge after acting as assistants for a short time.

Description of the system.—The system consists in representing by puffs of smoke from black-powder explosions the burst of shrapnel, conforming in every case to changes in fire data given. This is accomplished by placing canvas targets, representing service targets, and connecting them by telephone to a battery commander's station 1,500 to 3,000 yards away. The officer firing gets his fire data and gives it to the telephone man, who, instead of sending it to a fire battery, as in practice, sends it to the officer at the targets. The latter then assumes a certain range, height of burst, deflection and distribution, and represents the bursts of the four shrapnel where they would have fallen with the data given, taking the assumed data as correct. The officer directing fire then makes the corrections he thinks appropriate, which are complied with at the targets; this process continuing until the battery commander is satisfied from his observations that his fire is properly adjusted or until he is stopped by the officer directing. The latter should then make appropriate criticisms of the methods and execution of the problem.

Equipment and personnel.—The equipment necessary for one smoke-bomb range consists of the following:

(1) 1 battery target.
(2) 12 smoke bombs (2 spare), 16 if high wire is used.
(2) 10 five-pound safety cans.
(2) black powder.
(2) primers (.38 cal. revolver cartridge cases, primed but not loaded).
(3) 2 telephones.
(3) field wire.

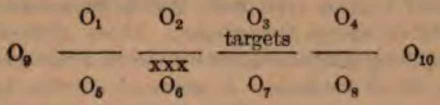
Personnel.—

1 officer, in charge.
1 noncommissioned officer, assistant.
2 telephone men.
1 powder man.
10 operators.

NOTE.—

(1) Matériel and drawings furnished by Ordnance Department; made up and painted locally.
(2) Furnished complete by Ordnance Department.
(3) Supplied by Regimental or Battalion Headquarters.

Method of operation.—The officer in charge places himself behind one of the center targets, so that he is hidden from the fire point, and controls all his men from this point. The telephone operator, connected with the fire point, is at his elbow. One operator is placed in front and one in rear of each target and one on each flank of the line, as shown in the diagram. Any convenient system of numbering may be used.



xxx {Officer in charge,
telephone operator,
and recorder.

The distance from target to operators is determined by the ground, the men being hidden from an observer at the fire point but close enough to be controlled by the officer in charge with the aid of a megaphone.

The operators are seldom moved for changes in deflection and never more than a few yards. For large changes the command is given to the other operators in the appropriate direction. For small changes, a yard one way or the other will throw the burst on or off the target, which is all the correction required. When it is desired to throw the sheaf entirely off the target, firing No. 4 and 10, or 1 and 9 is a sufficient indication. To send men 30 or 40 yards to the flank to indicate a large error causes delay without corresponding advantage.

It is the duty of the noncommissioned officer assistant to see that the men are on the alert for commands, that they execute them properly, and that assistance is rendered by the powder man whenever it is needed.

The record may be kept by the officer in charge or preferably by a recorder; it should contain name of officer directing fire, number of problem for the day, assumed range and initial data, followed by every command given by the officer directing fire, and indicating by a plus or minus sign opposite each range whether it was fired short or over. If a misfire occurs, this fact is also noted on the record, and the shot is reported over the telephone as "lost." The officer in charge need not concern himself much with any of the initial data except method of fire and range. The other corrections are entirely arbitrary on his part—that is, he assumes the shots would have fallen in a certain place, regardless of the data given. He should, however, give the distribution as nearly as possible as it would actually occur.

Great care is necessary in handling the powder, otherwise explosions are sure to occur, often resulting in severe burns. It is unsafe for the men to have large cans of powder by them. Accidents will happen even with the spring-covered cans furnished by the Ordnance Department. These cans are awkward to get into quickly and consequently the men will prop open the lid in spite of all cautions. A spark of burning powder may then cause a violent explosion. A satisfactory method is to give each man a small, flat tobacco can, such as comes with "Prince Albert" or "Velvet" tobacco. This will hold five or six charges. It is easy to pour from and the top being small there is not much danger of sparks getting into it. If they do, the amount of powder is so small that there are no serious results.

The men should be taught to load the bomb with the hammer hanging down toward the ground, putting the powder in first and then inserting the primer, being careful that the lanyard can not catch on anything in pushing the bomb away after loading. They should never be allowed to lay the bomb on the ground, but should be instructed to hold it in a sloping position across the knees when not in use. If it is laid down, the powder is apt to be spilled and cause a misfire.

After designating the operators to fire, when they are ready the officer in charge should report over the telephone "Ready to fire." The officer directing then orders "Fire'" when he is ready at the firing point.

Example.—B. C. sends following data: "A. P. Signal Mountain, deflection 3250, on first piece open 5, site 305, corrector 30, 3200."

The officer in charge assumes, for example, the correct range as 3500, that the bursts are high, and that the right shot is 10 mils to the right of the target with 10 mils between shots, the interval between targets being 5 mils. He enters the required data on his record as shown below and gives the following commands: "No. 9 move five paces south, Nos. 9 and 1 high burst," and reports "Ready to fire." When he gets "Fire" over the telephone, he commands, "No. 9, FIRE; No. 1, FIRE."

B. C. sends next command: "Left 5, on second piece, close 5, down 5, 3200."

Officer in charge commands: "Nos. 1 and 2, low burst," reports "Ready to fire."

Director: "Fire."

O. C.: "No. 1, Fire; No. 2, Fire."

B. C.: "3400."

O. C.: "Nos. 1 and 2, low burst"; "Ready to fire."

D.: "Fire."

O. C.: "No. 1, Fire; No. 2, Fire."

B. C.: "3600."

O. C.: "Nos. 5 and 6, low burst"; "Ready to fire."

D. "Fire."

O. C.: "No. 5, Fire; No. 6, Fire."

B. C.: "One round, up 3, 3400."

O. C.: "Nos. 1, 2, 3, 4, one round, medium burst"; "Ready to fire."

D.: "Fire."

O. C.: "Fire."

Record.

Oct. 5, 1917.
Prob. No. 2. Lt. Smith.—Conducting fire.
Assumed Range—3500.
A. P. Sig. Mt., D. 3250, 1+5, S. 305, Dr 30, R. R. 3200.

No. salvo.	Rn.	Fired.	Commands, etc.
1	3200	2−, h	L5, 2-5, d5
2	3200	2−, L	
3	3400	1−, 1lost	(1 Misfire)
4	3600	2+	1 rd, u3
5	3400	4−, m	
6			
7			

To conduct smoke-bomb practice efficiently requires:

1. *A skilled officer in charge.*

This officer must be wide awake, quick thinking, accurate, and thoroughly familiar with the handling of the sheaf. In addition, he must know the mechanism of his plant, so as to be able to place his shots where he wants them with the least possible delay, and must be able to get snappy action out of his men.

2. *A permanent, or at least semipermanent, detail.*

This is essential to get speed and accuracy in handling the bombs. Nothing but delays, mistakes, and accidents can be expected with a constantly changing detail.

3. *A good location.*

There should be good cover for the men. It destroys the whole illusion if men can be seen moving around the targets every time a command is given. The range should be at least 1,500 yards, in order that sensing may be as like service practice as possible.

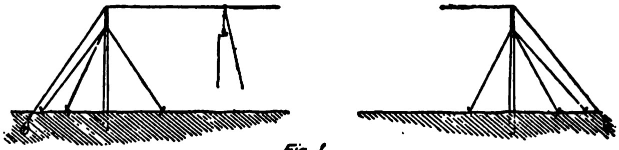


Fig. 1

4. *Good telephone communication and skilled operators.*

If mistakes are made in the transmission of fire data the shots do not correspond to corrections given and the officer directing fire is confused.

5. *Proper targets.*

The canvas targets illustrated in Ordnance Pamphlet No. — give the effect of service targets on the ground required for smoke-bomb work, with the least expenditure of time and labor in handling them. A larger target in most cases makes sensing so easy that it is worthless.

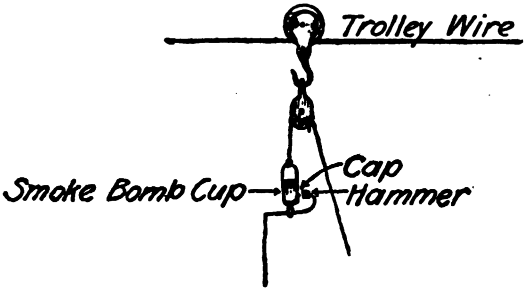


Fig. 2

6. *Apparatus in good condition.*

Rusty, bent firing arms, dirty primer seats, and broken staffs can not be expected to give good results.

If matériel is available it is well to provide the apparatus for giving higher bursts than can be given with the pole type bomb. This consists of two 40-foot poles made by splicing together sections of 2-inch iron pipe, planted about 80 yards apart and guyed as in Fig. 1. Across the top is stretched a heavy wire (No. 9), anchored by a "dead man" at each end. Four 1-inch pulleys run on this trolley, and to each is attached a second pulley over which runs a halyard attached to a smoke-bomb cup. (Fig. 2.) The bomb can then be raised and fired at any height up to 40 feet and placed in any position between the poles.

The same type of smoke bombs are used, replacing the staff with a weight. The apparatus is planted in front or rear of the line of targets and operated by the same men who use the pole type, when high bursts are required. All this matériel except the poles is furnished by the Ordnance Department. Signal Corps iron telephone poles spliced together make good uprights.

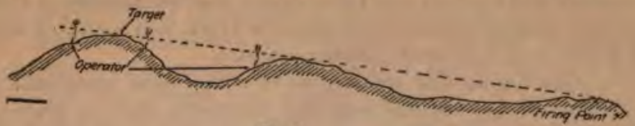


Fig. 3

7. *Terrain.*—The profile of the range used in order to get the best results should be of the nature of that shown in figure 3.

This gives cover from the firing point for the operators and allows nothing to be seen except the targets and bursts. If such ground is not available artificial cover of brush, weeds, etc., or trenches must be constructed for the operators.

EXHIBIT X.

The object of the course of instruction is to turn out an officer fit to be of immediate practical use. The standard of training and instruction in each subject should therefore be fixed in accordance with this principle as shown below.

(1) *Physical training.*—Capable of supervising instruction in this subject and to command units while giving the instruction personally. The officer must be able to detect faults in position and to correct them, and to know whether noncommissioned officers are giving instructions along correct lines.

(2) *Dismounted drill.*—Able to instruct and drill a gun squad, or a platoon, dismounted. He should also know and be able to give instructions in guard mounting and the posting of sentries. He must be able to instruct correctly in the manual of the

pistol and in pistol firing, and must have fired at least 10 rounds from each range prescribed.

(3) *Gun drill.*—Able to perform the duties of every number in a gun squad. He must be word-perfect in the drill of a platoon and of a battery, including the duties of a platoon commander.

(4) *Driving drill.*—Capable of driving in any position in a gun team, drilling as chief of section or gunner, and should have a thorough knowledge of the signals used in mounted drill. He should also be capable of commanding a fire battery and adjusting and conducting the fire of a battery. Candidates assigned to motor-drawn artillery must have a thorough knowledge of motors and tractors and the ordinary repairs incident to their use, and must be able to drive a motor truck and a tractor with its trailer or a load over difficult places.

(5) *Gun laying and sights.*—Have a thorough knowledge of the sights of the various guns and howitzers and the methods of testing and adjusting them, and must be a good layer with the different instruments.

(6) *Artillery boards, etc.*—Must understand the construction of the artillery board and be quick and accurate in its use.

(7) *Property.*—Must be thoroughly conversant with the equipment used by officers and enlisted men and must understand the methods of cleaning, repairing, and preserving same.

(8) *Signaling and telephone.*—Capable of sending and receiving messages by semaphore, buzzer, and flash at a rate of at least six words a minute. Must have a practical knowledge of the principles, construction, and operation of telephones and telephone lines. Must be able to test for telephone and line troubles and make repairs. Must have a detailed knowledge of the receiver, transmitter, buzzer, circuits, and the care of the telephone.

(9) *Map reading and sketching.*—Able to make a rough sketch of a trench or locality or to illustrate a report. Have a thorough knowledge of map reading and the use of the compass. Must be able to determine a point on the map by coordinates and by intersection and to solve problems on the map involving the location of batteries, the directing point, the observing stations, the targets, etc.

(10) *Model range.*—Have a thorough knowledge of all the principles of ranging and the various methods of applying them. Must be word perfect in the sequence of commands. Must be

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